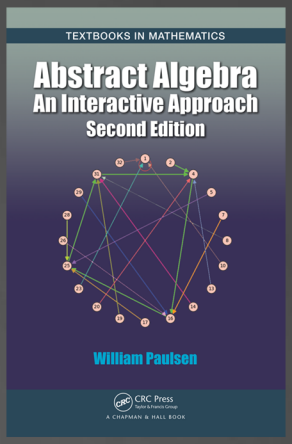
We've asked a variety of mathematics textbooks authors how they would answer the question:

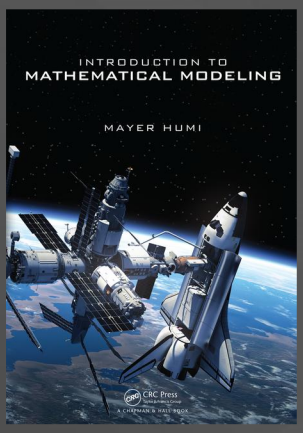
"What is Mathematics?"

See their thought-provoking answers inside!

CRC Press
Taylor & Francis Group
www.crcpress.com

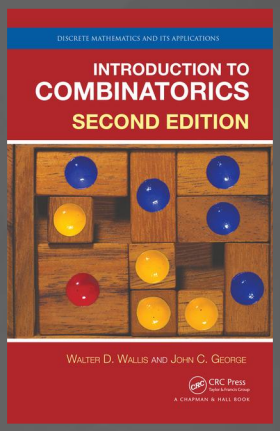
"Math is the foundation upon which all other sciences are built." — William Paulsen, author of *Abstract Algebra, Second Edition*



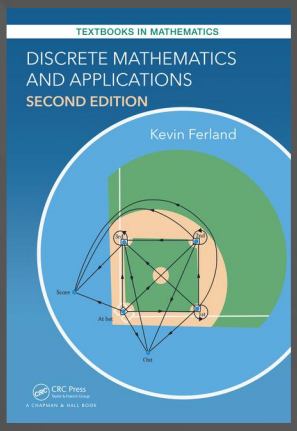


"Mathematics is a symbolic representation of phenomena. It enables us to analyze and make predictions about these phenomena and ones that are similar to it."
— Mayer Humi, author of *Introduction to Mathematical Modeling*

"I would say that Mathematics is all of the great vast logical system built upon the simple idea of a finite set, and of a one-to-one correspondence between two sets. From this idea, we get the integers; from the integers, we get the rational, real, and complex numbers. From there, we can construct groups, designs, graphs, functions, and all the other concepts (that I can think of) studied by mathematicians."
— John George, author of *Introduction to Combinatorics, Second Edition*

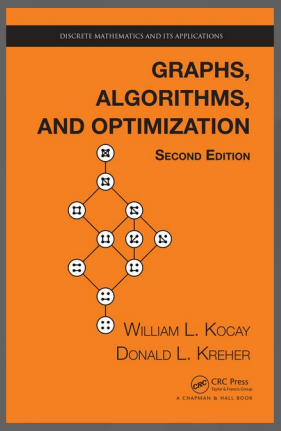


"Math is primarily concerned with patterns. Numbers are often useful in describing patterns, but arithmetic is more of a support for mathematics than a part of mathematics.
"As an example, think of Sudoku. These puzzles involve numbers, but they do not involve addition or subtraction; in fact, the numbers 1,2,3,4,5,6,7,8,9 could be replaced by the letters a,b,c,d,e,f,g,h,i and the puzzle would be essentially the same. In fact they involve arrays, called Latin Squares, with certain pattern properties; these arrays are used in a number of areas, including statistical analysis of experiments."
— Walter Wallis, author of *Introduction to Combinatorics, Second Edition*



"Mathematics has two principal components. It is the language we use to describe phenomena, relationships, and patterns via expressions and equations. And, it is also the study of those patterns and the search for structure and beauty in the way the universe works."

— Kevin K. Ferland, author of *Discrete Mathematics and Applications, Second Edition*, https://youtu.be/XLK89OXaxz8



"Mathematics is the world of number and geometry, and the realm of associated ideas."

— William Kocay, author of *Graphs, Algorithms, and Optimization, Second Edition*

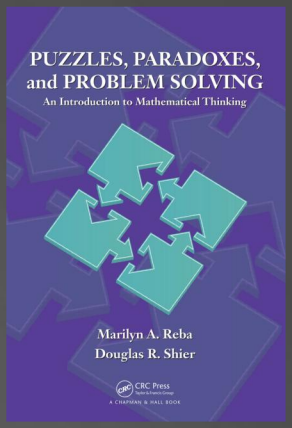
"Trying to explain what math is will [be] problematic, but I will try to give you an explanation. To begin let me point that we rarely directly ever teach mathematics in our courses nor do we ever exhibit mathematics in the books or articles we write. Instead we lecture and write about what was done with mathematics. Mathematics is thereby intuited by these examples. In the same way that a bridge is not engineering it is instead the result of having done engineering, calculus, linear algebra, group theory, graph theory and so forth are [not] in themselves mathematics they are the product of having done mathematics. Thus I maintain that mathematics is the reasoning process by which problems are solved and mathematical objects and formulations are created. You cannot precisely say what mathematics is. You can only provide examples of the result of having done mathematics."

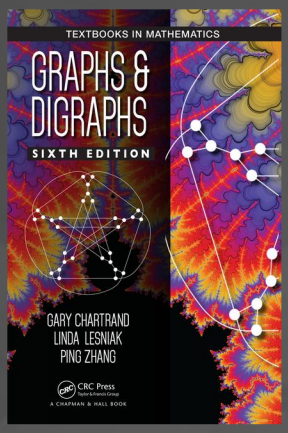
— Donald Kreher, author of *Graphs, Algorithms, and Optimization, Second Edition*

CRC Press
Taylor & Francis Group
www.crcpress.com

"For me this signifies 'Making Amazing Things Happen.' By translating perplexing situations into a powerful language and then applying appropriate analytic tools, mathematical thinking allows us to make informed decisions—the fastest route to take, the wisest investments to make, and the most promising prediction of winners in the March Madness basketball tournament, to name but a few."

— Douglas Shier, author of *Puzzles, Paradoxes, and Problem Solving*



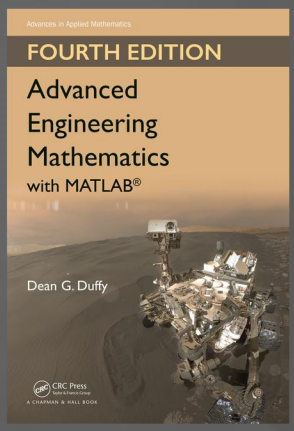


"Richard Courant and Herbert Robbins wrote an entire book attempting to answer this question. When I was a student or even a junior faculty member, I surely would have responded differently than I do now. But now, however, I think of Mathematics as that area where, through curiosity and observations, one looks for, hopes to find and then verifies the existence of patterns that appear in nature or in the abstract."

— Gary Chartrand, author of *Graphs and Digraphs, Sixth Edition*

"Mathematics is the essence of problem solving. In applied mathematics a physical process is modelled by a consistent set of equations that incorporate the most important physical effects and where the assumptions are clearly stated. The solution is then computed using those parameters of greatest interest."

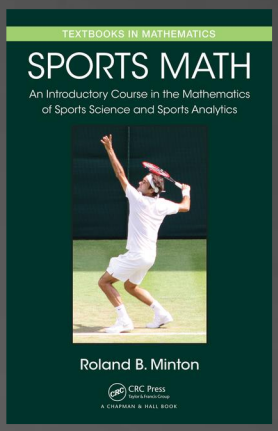
— Dean Duffy, author of *Advanced Engineering Mathematics with MATLAB, Fourth Edition*



CRC Press
Taylor & Francis Group
www.crcpress.com

"Math is the careful analysis of patterns to answer questions. Whether or not numbers are involved, if logical deductions are being made from precisely stated assumptions, then math is being done. Math usually starts with a question about how things do or do not relate, and often the question involves the 'best' way to accomplish a task of interest. The interest may arise from an important need in the world or from pure intellectual curiosity."

— Roland Minton, author of *Sports Math*



Request an e-Inspection Copy in Mathematics

Follow CRC Math & Stats on Twitter:
@CRC_MathStatsCRC

If you are a CRC Press author and would like to be included,
email Associate Marketing Manager Laura Holliday (laura.holliday@tandf.co.uk).

CRC Press
Taylor & Francis Group

www.crcpress.com